

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month was somewhat above the normal at land stations on the Atlantic coast of Canada and the United States, including the Gulf of Mexico, as well as is in the Azores and Bermudas. It was practically normal at St. Johns, Newfoundland, and slightly below at Swan Island, West Indies, and on the southern coast of England. The North Atlantic or Azores HIGH was well developed during the greater part of the month, and there were only three days in which the barometric reading at Horta fell below 30 inches.

From reports received, fog was comparatively rare over the steamer lanes as well as in the British Isles, and over the Grand Banks.

Taken as a whole, the number of days on which winds of gale force were reported did not differ materially from the normal for March, which is considerably below that of February, although the frequency of gales during the month under discussion varied somewhat in different portions of the ocean.

Charts IX to XIV show the conditions from March 1 to 6, inclusive, with a well-developed LOW moving eastward across the ocean. This disturbance was at its greatest intensity on the 2d and 3d, when the greater part of the steamer lanes was storm swept. Storm logs follow:

British S. S. *Scythian*:

Gale began on the 1st, wind W. Lowest barometer 29.02 inches at noon the 3d, wind W., 9, in latitude 44° 47' N., longitude 33° 29' W. End on the 6th, wind SW. Highest force of wind 10, W.; shifts, SW.-WNW.-W.

Swedish S. S. *Stockholm*:

Gale began on the 1st, wind W. Lowest barometer 29.28 inches at 4 p. m. on the 1st, wind W., in latitude 44° 30' N., longitude 47° 20' W. End on the 3d, wind WNW. Highest force of wind 10; shifts W.-WNW.-NW.-NNW.

British S. S. *Canadian Leader*:

Gale began on the 1st, wind SW. Lowest barometer 29.82 inches at 5 p. m. on the 1st, wind SW., 7, in latitude 50° 24' N., longitude 22° 26' W. End on the 2d, wind NNW. Highest force of wind 10, S.; shifts SW.-WNW.

Dutch S. S. *Lekhaven*:

Gale began Feb. 28, wind NW. Lowest barometer 29.86 inches at 1 p. m. on the 1st, wind WNW., 8, in latitude 38° 37' N., longitude 58° 34' W. End on the 2d, wind NW. Highest force of wind 10; shifts NW.-NNW.-NW.

British S. S. *Valacia*:

At 8 a. m. on March 2, wind increased to force 8, hauling to W., at 4 p. m. On the 3d wind steady from W. 9 to 10, until 11 p. m., then WSW., moderating. On the 4th wind S. increased to 9 at 3 a. m. and 10 at 11 a. m., then hauling to W., and WNW. by 2 p. m. Moderated in force from 6 to 8 p. m. Greenwich mean noon position on the 3d, latitude 48° N., 22° W.

British S. S. *Mackinaw*:

Gale began on the 2d, wind SW. Lowest barometer 29.25 inches at 4 p. m. on the 4th, wind SW., 11, in latitude 48° 45' N., longitude 19° 05' W. End on the 6th, wind NW. Highest force of wind 11, SW.; shifts SW.-W.-SSW.-W.-NW.

British S. S. *Bloomfield*:

Gale began on the 3d, wind SW. Lowest barometer 29.21 inches at 3 a. m. on the 4th, wind WSW., in latitude 43° 45' N., longitude 35° 18' W. End on the 5th, wind NNW. Highest force of wind 10; shifts W.-NW.-NNW.

American S. S. *H. M. Flagler*:

Gale began on the 4th, wind SE. Lowest barometer 28.52 inches at 2 p. m. on the 5th, wind S., 11, in latitude 59° N., longitude 10° W. End on the 6th, wind SW. Highest force of wind 11, S.; shifts 8 points.

On the 5th there was also a disturbance of limited extent in the vicinity of Hatteras, as shown by following storm log.

American S. S. *Atlantic Sun*:

Gale began on the 5th, wind W. Lowest barometer 29.98 inches at 8 a. m. on the 5th, wind W., 9, in latitude 36° N., 73° W. End on the 6th, wind NNW. Highest force of wind 9; shifts W.-NW.-NNW.

On the 7th northerly winds of moderate gale force were reported by vessels in the Gulf of Mexico, and on that date and the 8th there were also two other disturbances of limited extent and intensity; one near Hatteras, and the second between the 40th and 45th parallels and the 40th and 55th meridians.

On the 8th the southern coast of England and northern part of France were visited by an exceptionally severe cyclonic storm. While this storm will be described elsewhere, the following reports from vessels that were in the vicinity at the time should prove of interest.

Capt. A. H. Barnes, master of the American tank steamer *S. B. Hunt*, states:

Attention is called to a cyclonic hurricane experienced on the morning of March 8, 1922, while off the Isle of Wight, bound eastward Hamburg. At 4 p. m. March 7, barometer read 29.82 inches (all barometer readings are uncorrected) and at midnight (civil time) a fresh breeze was blowing, barometer reading 29.46 inches. At 4 a. m. on the 8th it had become overcast and started to rain; wind increasing to whole gale force from the south and barometer falling to 28.28 inches. At 6:30 a. m. hove to under half speed, wind shifting to WSW., with hurricane force and working around to W., W. by N., and barometer rose to 29.04 inches and wind modified a trifle; at noon reading was 29.26 inches, wind force 8. This storm occurring in the English Channel caused a short, deep, quick, and ugly sea, so that the ship was awash continually and labored heavily. According to reports received at the time, this storm wrought considerable damage on both French and English coasts.

American S. S. *Deuel*:

Gale began on the 8th, wind SW. Lowest barometer 28.67 inches at 2 a. m. on the 8th, wind SW., 9, at Start Point, England (latitude 50° 13' N., longitude 3° 38' W.). End on the 8th, wind W. Highest force of wind 12; shifts SW.-W. Wireless report gives velocity of wind at 110 miles an hour; instruments then blown down.

American S. S. *Emergency Aid*:

Gale began on the 7th, wind SSW. Lowest barometer 28.93 inches at 4 a. m. on the 8th, wind SW., 11, in latitude 49° 30' N., longitude 5° 22' W. End on the 8th, wind NW. Highest force of wind 11, SW.; shifts SW.-WNW.

From the 9th to the 11th comparatively high pressure prevailed over the greater part of the ocean, with a few reports received from widely scattered localities, where moderate gales were encountered.

On the 12th a disturbance appeared central near latitude 40° N., longitude 55° W., and severe gales were reported by a number of vessels between the 40th meridian and the American coast. This LOW moved slowly northeastward, and on the 16th the center was near latitude 48° N., longitude 33° W. Storm logs follow:

British S. S. *Bristol City*:

Gale began on the 12th, wind S. Lowest barometer 29 inches at noon on the 13th, wind NW., in latitude 43° 10' N., longitude 45° 55' W. End on the 14th NNW. Highest force of wind 12; shifts N.-NNW.

Norwegian S. S. *Foldenford*:

Gale began on the 11th, wind SW. Lowest barometer 29.16 inches at 6 a. m. on the 13th, wind SW., 11, in latitude 40° 56' N., longitude 46° 05' W. End on the 14th, wind NW. Highest force of wind 12; shifts SW.-W.-WNW.

British S. S. *Lexington*:

Gale began on the 12th, wind SSE. Lowest barometer 29.06 inches at midnight on the 13th, wind S., in latitude 46° 27' N., longitude 41° 27' W. End on the 14th, wind N. Highest force of wind, 11; shifts SSE.-S.-SW.-W.

British S. S. *Kenbane Head*:

Gale began on the 15th, wind W. Lowest barometer 29.22 inches at 10 a. m. on the 15th, wind WNW., 10, in latitude 43° 16' N., longitude 46° W. End on the 16th, wind N. Highest force of wind, 11; shifts W.-WNW.

From the evening of the 15th until the morning of the 16th northerly gales again occurred off Hatteras, as shown by following report from American S. S. *El Estero*:

At 7 p. m. on the 15th in latitude 33° 03' N., longitude 76° 46' W., barometer 29.74 inches, wind NW., 7; rough and choppy sea, overcast and squally. At 7:30 p. m. wind shifted N., 9, sky clearing, frequent squalls, barometer rising. From 10 p. m. to 2 a. m. on the 16th, wind N., 10, clear since 10 p. m. At 2 a. m. on the 16th in latitude 33° 51' N., longitude 76° 09' W., barometer 29.89 inches, wind N., 10; very heavy and rough sea, weather clear. 10 a. m. fresh N. wind, end of gale.

On the 18th there was a low central near latitude 30° N., longitude 50° W., and northwesterly gales prevailed over a limited area in the vicinity of the Bermudas. This disturbance moved slowly eastward and by the 20th had apparently filled in, as it did not appear within the limits of the chart. Storm log:

American S. S. *Devolante*:

Gale began on the 18th, wind SSW. Lowest barometer 29.31 inches at noon on the 18th, wind SSW., 7, in latitude 37° 07' N., longitude 46° 41' W. End at midnight on the 19th, wind SSE. Highest force of wind 10; shifts S.-SSW. Continuous rain throughout the gale with heavy, rough sea.

A disturbance that was central near Philadelphia on the 20th moved northeastward, and on the 21st the center was near Eastport, Me. Southerly gales prevailed along the American coast on both of these dates, while on the 21st the storm area extended as far east as the 60th meridian. Storm logs:

Dutch S. S. *Alkmaar*:

Gale began on the 20th, wind S. Lowest barometer 29.58 inches at 8 p. m., on the 20th, wind SSE., 10, in latitude 34° 59' N., longitude, 69° 34' W. End on the 21st. Highest force of wind, 11, S.; shifts SSE.-S.-SSW.

Belgian S. S. *Gothland*:

Gale began on the 20th, wind SSE. Lowest barometer 29.70 inches on the 20th, wind SSE., in latitude 40° 40' N., longitude 67° W. End on the 21st. Highest force of wind 10; shifts not given.

On the 22d and 23d the conditions were comparatively featureless, except that a few vessels along the European coast, between the 30th and 50th parallels, reported moderate northerly gales.

On the 24th and 25th a depression over Scotland was responsible for heavy weather in the region between 40° and 60° N., and 2° and 25° W. By the 26th the center of this low was somewhere over the North Sea, and winds of gale force were restricted to a small area in the southwest quadrants. Storm logs:

Norwegian S. S. *Ranenfjord*:

Gale began on the 24th, wind SSE. Lowest barometer 29.14 inches at noon on the 25th, in latitude 59° 33' N., longitude 1° 35' W. End on the 25th, wind ESE. Highest force of wind 11; shifts 4 points.

British S. S. *Vasconia*:

Gale began on the 24th, wind WNW. Lowest barometer 29.73 inches at 10 a. m. on the 26th, wind NNW., 10, in latitude 49° 27' N., longitude 13° 19' W. End on the 26th, wind NNW. Highest force of wind 10; shifts NW.-WNW.

On the 27th and 28th moderate weather prevailed over practically the entire ocean, with uniformly high pressure south of the 50th parallel.

On the 29th there was a disturbance of limited extent and intensity over the eastern part of the steamer lanes, accompanied by snow and hail.

On the 30th there was a low central about 10° east of St. Johns, Newfoundland. This remained nearly stationary during the next 24 hours, although increasing considerably in intensity and extent, as on the 31st, the storm area covered the region between the 35th and 50th parallels and the 40th and 50th meridians, while a few vessels experienced heavy weather outside these limits. Storm logs:

British S. S. *Alpine Range*:

Gale began on the 29th, wind WSW. Lowest barometer 29.36 inches at 10 a. m. on the 31st, wind NW., 9, in latitude 43° 21' N., longitude 41° 13' W. End on the 31st, wind NW. Highest force of wind 9; shifts WSW.-SW.-N.-NW.

American S. S. *Eastern Dawn*:

Gale began on the 31st, wind SSW., 7. Lowest barometer 28.83 inches at 8 p. m. on the 31st, wind SSW., 7, in latitude 43° 46' N., longitude 39° 51' W. End on April 2, wind NW. Highest force of wind 10, NNW.; shifts SSW.-NNW.

NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

The month of March opened with the North Pacific anticyclone somewhat southwest of its usual position and a well-defined depression over the Gulf of Alaska. By the 4th the anticyclone had extended eastward and was encroaching on the California coast, while the depression had moved inland and lost energy. A fresh depression appeared over the Aleutians. Following this date there was a general increase in pressure over middle latitudes of the eastern part of the ocean, an isobar of 30.50 inches appearing on the maps of the 6th-9th. During the same period the Aleutian depression moved slowly east-southeastward to the continent.

On the evening of the 11th pressure was rising strongly over the western Aleutians and a depression covered the Gulf of Alaska. The North Pacific anticyclone was south of its usual position. On the morning of the 13th the barometer at Dutch Harbor stood at 30.60 inches. Pressure continued above normal in this region until the 22d, while a depression of varying intensity lingered near the British Columbia coast. During this period the anticyclone moved inland on the California coast and a depression formed in its rear, apparently on the 18th, near the Hawaiian Islands. This latter depression moved leisurely east-northeastward to the continent, passing inland on the 23d.

The high pressure over the Aleutians gave way on the 23d to a depression from the westward, and thereafter to the close of the month this region was covered by a great cyclone, in the eastern part of which a series of depressions formed and moved east-southeastward to the continent. On the morning of the 31st the barometer at Dutch Harbor registered the low reading of 28.20 inches, approximately 1.56 inches below normal.

Over the western part of the ocean meanwhile a steady stream of depressions of varying magnitude was moving eastward, after having passed over or near Japan. During the period from the 1st to the 24th no fewer than 19 separate disturbances were charted by the Imperial